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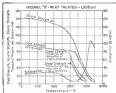
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- **Machining**—Inconel X<sup>®</sup> is machineable in all conditions. Because of its strength and toughness, it cannot be machined as easily as softer metals; it can, however, be machined at ordinary lathe speeds.
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# NEWS DIGEST

## DOMESTIC

Prof. Daniel C. Sayre has been named director of Princeton University's new James Frontiers Research Center, which is to be used for advanced work in atmospheric engineering, jet propulsion and chemical kinetics and related sciences. Sayre, who is chairman of the Department of Aeronautical Engineering, will head a five-man administrative committee.

B-7 Stratofortress now being built by Boeing, USAF and military officials. Program would include putting up a permanent Air Force base adjacent to Wurtsmith Air Force Base, which would have two main north-south runways lengthened to 12,000 ft.

Corporate Aircraft Owners Association has decided to transfer national headquarters from New York to 1015 Connecticut Ave., Washington 6, D. C., effective Mar. 1. The move is felt necessary to permit closer cooperation with government agencies on the defense program.

Lindbergh Naval Air facility, Goodhue, Ala., adjacent to the Goodhue plant, is to be made a permanent Naval installation. A \$1,865,000 program of rehabilitation and expansion was underway at the 60-acre base, where modified Navy planes have been stored.

Boeing C-77A operating on the Korean front has established a transport record from Japan to Hawaii in 10 hr 25 min, 26 sec less than a previous PAA Statolineer mark. The C-77A averaged 375 mph, maintained 450 mph for two hours.

Calumet Air Coach System, an agent selling tickets on large airplane airlines, has been charged by a New York County grand jury with fraudulent advertising and petty larceny. The grand jury has adopted a resolution urging that the state legislature acquire licensing of agents selling passenger transportation on the grounds that the sufficient bond be posted by agents to protect ticket payees.

Louis W. Goodland, former director of Economic Regulation associate domestic, has been appointed special deputy director of the major Bureau of Air Operations by CAB Chairman Delos Rindall. Robert F. Bridding, confidential assistant to former Board member Russell Adams, has decided to re-

sign from CAB to join the law firm of Chapman, Rapone, Walsh and O'Connell.

An Express shipment via 34 certified airlines last year totaled a new record of 4,215,445—16 percent over 1949. Gross air express revenues were up 32 percent to \$32,745,582. Average weight per shipment increased from 19.7 lb. in 1949 to 22.6 lb. in 1950. Average shipment flew 743 miles in 1950, 800 less than the 773-mile average for 1949 air express shipments.

## FINANCIAL

General Corp. had an estimated net profit of \$700,000 for the six-month period ended Dec. 31, 1950, amounting to \$2.25 per share after provision for estimated federal income and excess profits taxes. Net profit for the same period last year was \$530,637 after federal income tax. Current period sales amounted to \$1,075,000, a 25 percent increase over last year's figure. Current backlog of the Air Research Division is reported at about \$18 million, compared to \$32.5 million last November.

Capital Airlines has issued a call to redeem all its 4 percent convertible income debentures series B, due Sept. 1, 1960. Redemption date is Mar. 12, 1951. The company may convert its common stock at 90 shares per \$1000 debenture.

American Airlines picked up net earnings of about \$10,480,000 in 1950, or \$1.46 a share after preferred dividends, as indicated report by the company. The firm on average of 51.16, 578,000, and compared with 1949's net of \$7,144,740 on average of \$107, 256,000. Revenue passenger miles in 1950 were 1,885,000,000—up 15 percent from 1949.

## INTERNATIONAL

Western allies have agreed in principle to permit West Germany to do experimental work on industrial type gas turbine engines. Allied regulations have then for prohibited German experimental research, automatically banning jet engine work, but the regulations will be amended.

American Road & A. B. Smith's western hemisphere flag carrier, plans to open Miami New Orleans service soon, as an extension of its Rio de Janeiro-Miami route, and also open service Rio-Buenos Aires via Sao Paulo and Port Alegre.



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In dimpling magnesium and the harder aluminum alloys, the application of heat is recommended to eliminate cracked dimples.

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Breeze bellows are made in stainless steel, Inconel, monel, nickel, or other suitable alloys.

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## SIDELIGHTS

### Military

First news that USAF fighter armament is shifting to heavier caliber weapons comes from Northrop. The new F4U has an 28 mm cannon instead of the World War II conventional 50-caliber machine gun.

That 34,251,266 miles to AC Spunk Plug is for a new high altitude model that will go into Wright Major engines, presumably for B-56. Air Force based about 1000 civilian employees in December, bringing the total to 145,159. Army sends USAF to develop planes to fly under. Douglas C-124 can carry a light truck but AF has only a few such craft. Army says it won't a case of insufficient tests only in Korea but a case of not being able to get them done quickly. USAF will spend its time as time in England May 1 at Bedford, Cambridge, increasing AF personnel in the British Isles to 21,000. Air Force says it has sent first calls to nearly 90,000 voluntary reservists. Air Force loses from all states in Korea through Jan 18 totaled 225 planes.

### Airlines

National's President Ted Baker and VP John Stansbury had a poor row with American Giant people in Mexico City going out to every about a National Giant jet wreckage between New York and Mexico City.

### People

Henry Duclotte of Shell is moving as a partner, or as a consultant in research development in Ciba, Switzerland. USAF chief of staff. New's Corp. Robert W. Berry will return to a new school after 10 years' service. MGM has bought "The Sign of the Cross" film rights. USAF chief of staff. New's Corp. Robert W. Berry will return to a new school after 10 years' service. MGM has bought "The Sign of the Cross" film rights.

Kenneth R. McLean Hewitt, head of the old War Assets Service during the war? He is a partner in the backbone firm of William A. M. Borden & Co., and has been elected a director of Mitsui, Midland Corp. Also Borden, Borden & Co. public relations and well known aviation writer and editor, is in the U. S. on two months leave from her job of press attaché at our Embassy in Brussels, in charge of the office of information there.

### Atomic Air Power

Progress on NEPA's work directed by Fairchild-based on aircraft powerplant using atomic energy is best to stand of schedule and progress to hardware is not far off.

### Congress

A deep cut underway in the CAA's budget next fiscal year. Under the President's program, CAA would have \$199 million to spend. Transmex-mandated Sen. Byrd claims this can be reduced by \$75 million, eliminating non-essential activities. CAA spent \$62 million in fiscal 1956.



OFF IN SECONDS—Using night Eato berles, Chase C-124 transport gets into the air as smooth glide it started the takeoff, which stopped only 400 ft. of recovery. The big USAF craft cut last over 100 tons of cargo. Note the dim runway light trails under the wings.



PACKAGE FOR A PRINCE—Fast Royal coupled Proteon turbo-prop engine for the 140-ton Sen France-then flying boats now under construction is shipped (left) at the Royal plant prior to consuming and being mounted on a truck (above) for shipment. The Proteon will use four of these engines plus two single France units.

## Picture Highlights of the Week

FRENCH ORIGINALITY—The striking new prototype jet fighter, the SE 2410-01, now being tested, has two Hispano-Normaux mounted one above the other. The side intake is atop the fuselage behind the main-damage zone. The low-mounted tail has variable incidence.



## Washington Roundup

### Tactical Planes on Wey Off?

Army's Chief of Staff, Gen. J. Lawton Collins, expects the soon-launched short-range guided missile to be one of an array of guided torso weapons "in not many years."

He lists five major advantages over the tactical plane. It can be used:

- Against enemy formations at short distance off. Doubling up to be done "in a safe distance" away. And banking in at little height in a strong off an attacking force entering the point of contact for battle.
- In poor visibility "with considerable accuracy." Tactical planes are severely limited in night and bad weather attacks. A light illumination system can be used, instead of enemy troops, are repelled out.

### Atomic Artillery?

Atomic Energy Commission's Nevada testings may point to a revolution in military defense and offense strategy.

Joint Congressional Atomic Energy Committee's chairman, Sen. Frank McNamara, cautiously lists this. The tests have important implications, from the field of civil defense against atomic attack to the field of military strategy and tactics.

Informed observers mark down the objective of the tests as the development of atom-powered missiles and artillery for tactical operations.

McNamara significantly refers to the "various" uses of atomic weapons. However, the atomic bomb-for long-range strategic attack on key cities and industrial concentrations—has been the only operational atomic weapon discussed.

### Air Power in Being

An Force spending is accelerating slowly.

The only early air force plans defense, expansion in service. It's the acquisition of the best of air strength as long, ready to strike.

During the six months after the Korean outbreak last June, USAF expenditures were at a rate of \$5 billion a year. Now they are up to a rate of \$6 billion a year. It indicates how forward-looking the plan. USAF expenditures will reach a peak rate of \$13-to-\$15 billion a year by the end of 1951, then level off.

### PAA-TWA Fight

PAA will go all-out in a campaign to eliminate its largest competitor, TWA, from the international airline picture.

PAA has a permanent certificate for the North Atlantic route. But TWA's temporary certificate to Europe expires June 30, 1952. PAA and TWA officials are already sharpening their knives for a showdown battle on no evidence.

PAA will argue American flyers are being misled by the support the defense effort and shouldn't be added with the additional burden of supporting two competing North Atlantic routes. If all the business need is one line, additional routes will be minimized.

TWA officials report that PAA has already opened a passenger's monopoly in European capital, putting TWA as a monopoly fly-by-night operation that will

soon be cut out of the picture and in the meantime shouldn't be taken seriously.

### Testing Program Fizzle?

Some sources have written off hope that the \$12.5 million prototype testing program will accompany the program development of new crops and food types under the incentive that the government will adjust testing costs. Manufacturers, passed with defense work, are not too interested.

These sources are skeptical, in fact, that the program will accomplish anything worthwhile for these reasons: They're impatient at the two-year program. It took Government Department and CAA three months—down enactment of the program implementation in September to the first of the year—to decide who would administer it. It was not January before CAA officials and industry advisors met for the first discussion. The outlook looks poor. It was not until July 1950 that Congress for a new launched thousand dollars to do some more testing until April.

• These sources are doubtful of CAA's indicated plan to bypass the testing of advanced British and Canadian tests and commercial jet aircraft in favor of testing the Super Delta 1 for jet engine tests and the B-45 bomber for jet operations. The B-45 is an overloaded with equipment that CAA officials concede that even with one-potential data from test runs, its performance in commercial operation could be little more than "guessed at."

### Aviation Goes

Proposed a that price rise and increased taxes on gasoline will add upwards of \$15 million to the operating expense of the domestic airlines this year.

The domestic system consumed approximately 400 million gallons last year.

The price rise of approximately two cents a gallon since last fall means it will cost some \$5 million more for the same amount this year.

Thus, the President's proposal for doubling the gas tax—two was and one-half cents to three cents a gallon—would involve an increased levy for domestic flights of over \$7 million.

An Transport Assn. hasn't decided whether to fight the tax boost.

### What's Ahead

Defense McNamara Director Wilson and Defense Production Administration Harman give this picture of what's ahead:

• Major shortages will be in the basic steel, aluminum, copper and the facilities to produce them. Additional steel capacity won't come into production in time to meet a serious shortage both situation, as steel shortages situation "may" be avoided. Materials for additional capacity for producing steel will have the right of way.

• General call for quality for materials will be: industry backbone to build up defense strength in foreign developing, military support—such as aircraft, air and rail transportation, industrial capacity; civilian needs.

• By the target date of late 1952, the U.S. will have a year's supply of military hardware on hand to wage war, plus a substantially strengthened reserve stock to meet attack, and a greatly expanded industrial base.

## WHO'S WHERE

### In the Front Office

R. Vance Underwood has been elected president of Robinson Aircraft. Underwood is one of the parents of the development of the motor which will complete in year of 1950. He is a partner of the C. L. F. Holding Corp. (Dallas) in Miami.

Dr. L. H. Shostetmiller has been appointed vice president of engine divisions for KLM Royal Dutch Airlines. He joined KLM in 1917 in a high capacity and has held various positions since, including secretary of the board. He is a major in the Dutch Army Reserve and represented his country in working and bilateral air agreements all over the world.

Douglas C. Fisher, vice president of General Electric, has been named in the company's new design of jet engines. Fisher's former duties as head of the general engineering laboratory are being assumed by Harry A. Weiss, vice president in charge of engine design.

First Asst. William E. Fisher, Jr., EEC (BRL) has been elected president of the International Telecommunications Laboratory, Inc., successor of ITL. Fisher's experience in aviation radio work will be added to further the company's research activities. He is also a member of ITL's board and chairman of the board of A. J. C. Cable & Radio, Inc., ITL's communications company serving Central and South America and the West Indies.

Col. Linton E. McDaniel, has the past two years director of Michigan's department of aeronautics, has been named the state's chief defense director. With military experience dating back to 1917, McDaniel received international rank in 1927, when he made the first flight in Hawaii with Lt. Mayo Briggs as a fighter instructor. He continues his duties as state aviation director.

### Changes

Harold Kane, writing with the New York Times, Tuesday for 11 years, has joined Ryan Aeronautical's public relations staff.

Thomas O. McCann has been named general counsel and assistant secretary of Pacific Western Corp. Edward C. Coleman has been appointed director of production in Canada and will handle both manufacturing and purchasing.

Sheldon E. Fuchs has been promoted to manager of field engineering service for the Ray Corp. Mass., aviation auditor and editor.

Edward H. Howell has been named special representative for General Electric's Aeronautics department in Washington, D.C. He has former post manager of sales of the Martin and Lockheed divisions.

John C. Brown, Jr., has been promoted to traffic manager for Boeing International Airways.

Merion M. McWhorter has been named to the newly created post of representative of insurance after his United Air Lines as the company's executive officer in Chicago.

## INDUSTRY OBSERVER

• Soviet Russia officials predict that employment at the Wichita plant is going to reach 10,000, prefer than the post World War II employment in B-29 manufacturing in 1944. Boeing Aircraft is probably going to at least 7000 and Cessna is on its way up to at least 3000 workers. Current levels are less than 5000 at Boeing and around 2000 at Cessna.

• Reason for the high degree of interest in engine-powered helicopters recently shown by all three military services is the very high rates of useful load to gross weight the "rotary blade" aircraft can haul into the air. For a helicopter of gross weight, the ratio can be as high as 70 percent useful load, probably the best 30 ratio set achieved by any type of aircraft. Greatly increased amount of lifting, because of the way of the engine at the top, is enabled with having the jet engines equipped through qualities. The additional simplicity of the jet engine design is also attractive. Most remaining problems are the self-rotation, the high fuel consumption, and the high noise level.

• Boeing's design jet turbine engine, which weighs out about 175 lb for its weight of less than 200 lb, is being tested at from a lot of angles, aerodynamically as well as for military engine power generation. Lighter than conventional piston engines of the same size, it is attracting attention of helicopter engineers, small plane designers, and lighter-than-air craft designers, who, because a battery of the engine turbines lined up to provide power for a blimp.

• Proof of the outstanding success work done by helicopters in Korea shows up in the report of U. S. Marines First Helicopter Squadron that its captain pulled out 25 Korean downed at sea and behind enemy lines, and evacuated over 150 wounded and moved more than from front line zone in the period from August 1950 through January 1951.

• Rolls Royce, Ltd., has started a new production program for jet engines, probably Avon turbojets, for its Glengrove, Scotland factory, making the jet to be built there are powerplants for an RAF jet bomber, probably the Canberra.

• Canadian Car & Foundry Co. will soon open its Ft. William (Ontario) plant to begin production of a new RCAP fighter jet, described as a modernized version of the North American Harvard (T-6). Meanwhile CCFC is now overhauling additional Harvard at its Montreal plant for the RCAP.

• USAF has set Mar. 15 as deadline for aircraft entries in design competition for a proposed 1954 intercepter. Industry forecasts look for a number of entries. The competition will be a contest with additional Phase II phase contracts going to Lockheed, Convair and Republic as possible alternatives. This is the second half of a packaged requirements assignment given by USAF to the aviation and electronics industries, calling for a fully automatic anti-aircraft intercepter capable of carrying on high-altitude intercept and a pilot aircraft. Hughes Aircraft (Aviation Week Mar. 15) has already won the competition to supply electronic guidance systems for the intercepter.

• Experimental passenger helicopter service operated by British European Airways with British-built Westland-Sikorsky SH5s between Cardiff and Liverpool is scheduled to terminate Mar. 31 after a six-month test period. The service which was not expected to show a profit in its experimental phase with small aircraft, has actually shown a loss of approximately \$54 a trip. In service operations with two mainline daily, the loss amounted to approximately \$736 a day.

• De Havilland of Canada is reported doing preliminary development work on a new turboprop version of the Beaver, intended as a replacement for the Mohawk. The Mohawk is a larger single-engine bush plane freighter and military utility cargo plane.





**SIX CANNON** closely grouped around the F-85's nose provide heavy firepower concentration.



**POWDER HAZE** obscures the desert down at the first combat test in Mexico test.

## F-89 Scorpion's Deadly Sting



**20 MM SHELLS** are power loaded using F-85's electrical system to battery unit.



**TRENCHES** dug as the need by the shells graphically show the enemy's tremendous defensive power.

Carrying elaborate airborne radar capable of making possible interceptions of enemy aircraft in the heaviest weather, the five-place Northrop F-89A Scorpion is powered by two Allison J-35-A-21s (fitted with turbochargers giving about 6000-hp thrust each). The F-89A is in the 900-mph class. The potent integrated all-weather fighter is currently in large scale production for the USAF at Hawthorne, Calif.

## Russians Can Make Good Planes

UN victories over Korea laid to our pilot rather than aircraft superiority; MIG-15 rated high.

By Alfonso W. Jessop  
(McGraw-Hill World News)

Tokyo—Russians can make good air planes. That is the only take conclusion to reach after considering the performance of MIG-15 in Korea.

It is true that F-80, F-84, F-86 and F-84 pilots have shot down 20 MIGs, while the UN forces in air-to-air combat since Nov. 1 were only five, according to the Far East Air Force. And MIG pilots are definitely avoiding combat these days.

But the surprise is pilotage and gunnery. American fighter pilots have completely outmaneuvered and outshot wherever they met the MIGs. The F-84 equipped with the electronic computing sights has hit the MIG at ranges up to 6000 ft with 30-cal machine guns.

The Russian plane has been firing. The Russian plane has been firing to compete with it.

**MIG Performance**—What stood out about the MIG-15 are its speed, rate of climb, maneuverability and ability to take a beating. Its top speed is rated well above 650 knots (late figures thought it only 580 knots before Korea), only 15 to 20 less than the F-86 Sabre. It is at least 100 mph faster than the F-84 and over 50 faster than the F-84 Thunderbolt.

At sea level the MIG-15 climbs at about 5000 fpm. It climbs at 4000 fpm at 30,000 ft altitude. Coupled with its high speed, its climbing characteristics has enabled some MIGs to run over from combat.

Another advantage of the MIG is its apparent high rate of workmanship which is considered greater than that of any U.S. aircraft now operating in Korea. Probable that it is accounted for by an afterthought to the New or Newer type engine with which the MIG is associated to be equipped.

**Then Can Take It**—Two—More MIGs have been badly shot up but have still stayed home across the Yalu. Pilots have been amazed at how much punishment it has taken and still kept flying. As pilots saw it aircraft is not actually tough. The threat is strength necessary to keep a jet together at high speeds which withstands the gulf of battle.

The fact has not only been true of the Russian MIG but has also been true of U.S. aircraft.

Apparently the MIG-15 is possible in similar to the F-86 Sabre. The F-86 was patterned mainly after German designs captured at the end of World War II. There is good reason to

believe that the Russians did a little better on the design who drew the plans. Two major differences are evident. The MIG wing incorporated a deflection somewhat like the F-86 wing of the Sabre. Another difference is the high placement of the horizontal stabilizer. It will be interesting to find out how it is matched, remembering how many F-86s were lost during the early development period because of tail failure.

The high tail structure may add to the MIG's maneuverability at lower speeds. There is a possibility that there is a compensating factor between the wing shape and the stabilizer position which enables the MIG to hang together under high loads. There is no doubt among pilots that the MIG has taken a heavy G load.

Grass weight of the MIG is between 12,000 and 13,000 lb. Its wingspan is 32 ft 6 in. and its length 32 ft 9 in. Its range is unknown but approximately equal to the F-86. The MIG has taken a lot of damage at the Korean Manchurian border only as far as Shenyang according to our latest sightings. But there is no index.



ADAM SMITH CAB

Newest member of the Civil Aeronautics Board is 44-year old Joseph P. Adams, recently sworn in for a seven-year term by Board Chairman Dale W. Russell. Adams has a wealth of aviation experience beginning in 1936 when he graduated from the Marine Corps as a flight officer. He saw active duty during World War II with the Corps. He has a commercial pilot's license and was formerly director of aviation for the state of Washington from 1946-1948. He leaves a private life in home in Washington to take his new post.

how fast it has become all about because of fuel shortage. The MIGs operate from what appear to be an excellent concrete airport at Ansheng with a 7000-ft runway, a second runway under construction and a circular field under survey. Aircraft are kept in overcast.

One F-86 wing commander now put out the combat fighter jets are well by the day but they are slow to get their first fighter sweep over the field. As it is, pilots with the MIGs take off, climb to altitude unopposed and then decide whether to engage or not. Usually the MIGs attack only with a normal superiority of 50 percent or more.

**Low Lethal Load**—The lethal load of the MIG is low order. There's no indication that it could not be adapted for higher bomber work. Its maximum speed is 3700 mph, with variable velocity as low as that our pilots can see the white-hot shot slowly coming through the air. But it will track a big chunk out of anything it hits.

At least one of our jets which might have been an F-86 or an F-84 lost to the MIGs in an aerial battle is believed to have gone down with a 3700-mph left on the tail pipe. On the other hand, several F-86s, one report being shot down by the MIG, have been shot down by the MIG-15 with an noticeable effect. Besides the 3700-mph, the MIG carries two 37mm machine guns. All guns are to come under the lower lip of the air intake.

**Who Flies Them?**—Still unanswered is the question of who flies the MIG. The pilots may be Chinese, but there is considerable speculation that they are Russian or German. This speculation is supported by the statements in camp to combat other than over Communist-held territory. The fact that we might find out that they were Russian.

But other "authorities" say that the Russians were first over their aircraft and that equipment over to these satellites, to why should they give the Chinese their secret-to-know but before anyone.

It also is said that the only Chinese who might have been training to fly MIGs are those who were trained in the U.S. during World War II and who only after 1945 deserted China's ranks for Mao's. Such Chinese are not trained. So it is doubted that MIGs would be turned over to them. F-86 pilots who flew against the Germans in Europe are convinced that the tactics of the MIG pilots are the same as those with those used by the Luftwaffe and conclude therefore that the pilots are Germans.

**U.S. Losses**—The Far East Air Force has admitted only one of its aircraft losses as a F-89. The others could be





# FINANCIAL

## Investment Trusts Buy Air Shares

Funds have generally increased aircraft, airline issues in portfolios to reap advantage of improved values.

The improved market value of airline assets has been a consistent factor in the 1970s purchase of specialized aircraft investment trusts.

Norfolk Aviation Corp., the largest mutual fund devoted exclusively to aviation investments, provides the most interesting study in its portfolio shifts of last year.

As of Dec. 31, 1970 its net assets were up to \$10,314,745, or \$22.37 per share. This compared with only \$7,439,945, or \$16.65 per share at Dec. 31, 1969. The 1970 year-end showing is after the divestment of \$734,651, or \$1.65 per share in dividends.

The opportunities in National Aviation portfolio as revealed by its adjusting market prices of its holdings. It is evident that the fund makes a deliberate attempt to balance aircraft stock along policy lines formulated on a continuing basis.

**More Airline Interest.**—For example, during 1970 a constant build-up in airline shares was in progress. At Dec. 31, 1970, airline holdings accounted for 43.1 percent of the total portfolio as compared with 36.3 percent at year's end. Aircraft and accessories, previously virtually unchanged at 44.4 percent with cash, U.S. securities and nondividend yielding at 15.5 percent from 25.4 percent.

On balance, purchases of aircraft and airline investments outweigh aggregate sales in a number of instances where securities were sold, it is probable that the unswerving interest may have been too conspicuous and the desire to reduce individual positions grown too large by market appreciation.

During the last six months of 1970, National Aviation purchased the following additional aircraft shares: 200 Boeing, 2700 Gates Wright "A" and 500 Sperry Street sold were (as reported) by 900 Bell, 1700 Bendix, 15,000 Conquest, 200 Douglas, 12,000 Convair, 8900 Lockheed, 1700 North American and 4900 United Aircraft.

In the aircraft group shares acquired during this period were: 10,800 American Airlines, 10,000 3600 Bonair, 2700 Chicago & Southern, 400 Delta, 4900 Eastern, 7100 Pan American, 3700 TWA and 15,000 United. The only sale was 1500 United Airlines, preferred.

Reflecting these adjustments, National Aviation's portfolio as of Dec. 31, 1970, consisted of the following:

- Aircraft—10,500 Bell, 7500 Bonair, 200 Boeing, 5000 Convair, 7700 Gates Wright "A," 5000 Douglas, 3700 Eastern, 2400 Gates Wright, 20,200 Convair, 16,700 Lockheed, 24,500 North American Airlines, 5000 Sperry, 15,000 Thompson Products, 12,500 United Aircraft common, and 1900 United Aircraft preferred.

- Airlines—20,000 American Airlines common, 10,400 American Airlines preferred, 25,000 Bonair, 17,500 Chicago & Southern, 17,000 Delta, 30,000 Eastern, 15,000 Pan American, 17,500 TWA, 24,000 United Air Lines common and 5010 United preferred.

- Other—10,000 Helicopter Air Service Class "A," 10,000 United Airlines, 10,000 Air Express International.

The total cost of the portfolio of National Aviation at Dec. 31, 1970, was \$6,711,020. The market value, however, stood at \$9,116,121, as of that date. The only commitments selling below cost were Air Express International and United Airlines. The largest single aircraft investment was in 16,700 shares of Lockheed with a market value of \$627,000.

Convair was next with 20,200 shares valued at \$555,000. The largest airline investment was in 30,000 shares of American Airlines, preferred, with a market value of \$529,400. Next were 30,000 shares of Eastern valued at \$415,000.

**Securities Trusts.**—Other specialized trusts, but of smaller aggregate amounts, also exist within a broad group of funds sponsored by professional distributors and managers. These trusts are of the so-called mutual or open-end variety with a continuing source of capital provided by small investors.

The largest in this category is represented by the aviation arm of Group Securities, Inc. It is difficult to follow the investment philosophy of this fund as it was liquidating several and adding others throughout 1970. The only significant additional purchases made during the six months ended Nov. 18, 1970 were 1000 Bonair, 4000 Eastern and 750 National.

During this same six-month period it disposed of, among other securities, 10,000 Pan American, 2300 Convair,

3000 Douglas, 1900 Lockheed, 1000 North American Airlines, 2000 Sperry, 5500 Northwest Airlines, 4900 Bonair and 500 United Air Lines. These liquidations took place before the subsequent sharp rise that developed in aviation securities.

As of Nov. 30, 1970 Group Securities' aviation holdings consisted of the following: 15,000 American, 2000 Bendix, 1000 Boeing, 13,100 Bonair, 10,000 Convair, 3900 Gates Wright "A," 2000 Douglas, 6200 Eastern, 15,000 Fairchild E2C, 5400 Convair, 6000 Lockheed, 5000 Northwest Airlines, 11,000 North American Airlines, 2000 Northwest Airlines, 6000 Piper, 6000 Republic, 6300 Seis, 2000 Sperry, 4500 United Aircraft, 10,000 United Air Lines and 1900 Western.

**Early Liquidations.**—New York Stocks, Inc. is another diversified group of investment funds having an aviation classification. Its shifts during the six months ended Nov. 30, 1970 also show liquidations in advance of the big rise that subsequently developed. For example, during the last half of its fiscal period, New York Stocks sold aircraft and airline equities on balance in order to purchase 4000 Convair. Its holdings as of Nov. 30, 1970 were represented by: 4000 American, 800 Bonair, 3000 Boeing, 2400 Convair, 500 Douglas, 2600 Eastern, 1800 Electra Jet, 3300 Convair, 1200 Lockheed, 2700 North American Airlines, 100 TWA, 1200 United Aircraft, 1000 United Air Lines and 600 Minneapolis-Hennepin Regional Co.

Aircraft specialists trust, the aviation arm of Investment Short, also effected several adjustments in its portfolio during the last six months of its fiscal year ended Nov. 10, 1970. For example, it sold 300 Boeing, 150 Douglas, 1900 Convair, 300 Republic and 100 United Aircraft. Purchases consisted of 500 Convair, 200 Fairchild E2C, 200 Lockheed, 100 North American and 100 Seis.

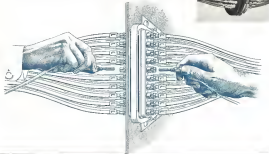
As of Nov. 30, 1970 its portfolio consisted of 9400 American, 2700 Boeing, 1400 Capital, 4500 Convair, 1100 Douglas, 1900 Eastern, 4000 Fairchild, 2000 Convair, 1200 Lockheed, 3000 Martin.

Also 5100 North American, 2600 Northrup, 1700 Bonair, 2600 Pan American, 4000 Republic, 1300 Seis Aircraft, 1300 TWA, 2100 United Aircraft, and 2000 United Air Lines.

An examination of these specialized aviation funds reveals a general lack of consistency in their selection of investment commitments. Moreover, the actions of a number of these groups indicate that both their selection and timing have much to be desired to qualify as specialists in aviation securities.

—Seth Atchard

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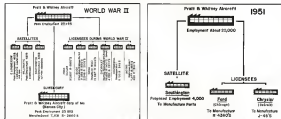
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## PRODUCTION



PRATT & WHITNEY EMPLOYMENT of 20,436, easily showing, is still under World War II peak of 27,000.

## Mobilization Stirs Up Wasps' Nest

P&W's rapid restoration of Southington plant shows speed it can apply in switch to all-out production.

By Irving Stone

Pratt & Whitney Aircraft has walked through the talking stage and is well into the doing phase of its production expansion to cope with the still demands of the national emergency.

A major move in the expansion pattern already has been made. The company has taken over, rehabilitated and begun operating the Southington, Conn., \$15,000,000 U. S. Government-owned plant which had been vacant since just after V-J Day.

Southington's job—The facility taken over P&W's engine overhaul department, moved from East Hartford, to make room for expanded engine production. It will overhaul all current and new engine production engines from the B-57 up through the J-42, a few J-45s for the experimental department, and Hamilton Standard diesel products, including props and governors.

The Southington agency won't stop at overhaul. It will incorporate piston engine components. Mating of all parts is not contemplated now, but that may be fabricated at Southington if the conditions of the company become sufficiently stringent.

Fast Schedule—The move with which the East Hartford Southington move is being accomplished is a good indication of how P&W is ready to meet wide expansion. On Oct. 1, 1950 it took over the Southington plant, which was badly in need of repair, both internally and externally. By Jan. 5, 1951 the facility was sufficiently rehabilitated to begin the moving operation from East Hartford. Ten days later the engine overhaul department had been installed and was in complete operation.

On Jan. 15, movement of the crank case fabricating line was begun. Five days later it was in full operation with a battery of about 15 machines. By closing Jan. 28, the cylinder bursing, taper grinding, pistons and shaft departments were moved, and they were in high gear by Feb. 5.

By May, the entire facility will be in operation and well under way to accommodate a target force of 4,000. Peak employment in World War II it was about 3,000, when P&W operated Southington solely as a cylinder assembly plant. But now the expansion is more complex and covers a complement of more processes.

Moving Efficiency—Recently this writer witnessed an impressive demonstration of how efficiently P&W is used for expansion changes. Arrives at the Southington plant, and where mounted on skids were loaded off the tracks by bulldozers, rapidly pulled

across the factory and spotted snugly at four placement tracks numbered to correspond with the specific machines.

At this location the pullman was unhitched from the machines and, swinging around as front, rolled there into place much like a car pushes a littered motor. Two men with crowbars followed to rig the machines into exact location in a couple of seconds. A crew of millwrights, electricians and plumbers were at the site to begin the hooking agencies at once.

The speed and precision of that ball down operation operation was such that two of these prime movers arrived in turn truck and floor location to spot small machines at the rate of about 1 every 5 min. Large machines require a waiting time of about 5 to 15 min.

Little Time Lost—Movers were placed so that a machine would not be out of operation for more than 24 hr. Thus, 12 heavy craneage department men drove that left East Hartford in the morning was set up and operating that same afternoon at Southington.

Those units that had been begun at East Hartford were moved along with the particular machine and completed at the Southington plant. And where movement, the machine operator went along with the job.

About 1200 machine tools are involved in the move. About 225 of these are still from war surplus and other sources.

Then and Now—Obviously the Southington operation is just the beginning



NUTMEGS piled on the floor of Southington plant show where equipment such as...



MULTIPLE FINGERS drill press gas. After boring and heat-up, operation was on...



ELECTRIC CONTROL, panels being set in place. The whole thing takes a couple of hours...

of the expansion program. How is P&WA going to spread its operations from this point on?

The answer may be contained by a comparison of its production facilities in the last war with those it has at its incipient expansion stage. In the last war, P&WA operated its main plant at East Hartford and a subsidiary at Kansas City for fermenting new production capacity. Those satellite plants, of which Southington was

one, manufactured parts for these engines. Its business (jets and aircraft engine build) produced current engines for the company.

Now, that is the East Hartford plant, primarily for assembly and parts manufacturing, the Southington satellite, but two business previously scheduled, one for parts engine, one for jets. The main plant has an employment now at about 20,000 and is climbing at the rate of about 50 per

cent. This is still under the plant's peak inventory—more than 27,000 in the last war. The former satellite plants are no longer available and it is unlikely that any others will become available in the vicinity of the main plant. The Kansas City plant is also unavailable. Lessening substantially will be extended. But this will not be enough.

George Abrahams, United Aircraft manufacturing, which always has catered government planners in industrial mobilization, doubts that the creation of production facilities must be accelerated, it is likely to move ahead on its own and wait for government schedules to catch up.

At East Hartford, about 25 percent of the production area now is devoted to jets. In terms of horsepower, this is equivalent to 30 percent of the total engine output. This jet production must necessarily increase substantially, and the high volume engine will be the J-45, since the Gouvenor 271 seems a major factor in the Navy program and the Lockheed F-94C will use a large share in the Air Force's program. Both these planes use J-45s.

Major Complication Now—While these are lower production parts in the jet as compared with the piston engine, this is counteracted by the greater precision required. Result: at this stage of experience it equates about the same man-hour per engine for the jet as for the piston engine, even though the production cost per horsepower is less for the jet. Later, in high volume, and with more experience, the jet production man-hour will decline.

Thus, from the outward aspect, while the production picture seems not much different from World War II, the underlying differences are considerable. There, there was only one basic type of engine—the piston engine. Now, P&WA has three basic types in after-burner, turbo-prop and turbo-jet.

In addition, development is now proceeding along that three lines in regard to single direction previously. And development is more intensive, being along with better gases and coupling into more intricate plants.

Another difference is that greater performance advances will come from engine internal design changes rather than from operational "tweaking" procedures.

► **Experimental Teams**—But P&WA is better prepared for the more complex test production task because of experience gained and the top level in planning, production and management personnel carried over from the last war, when war work was well developed—now for East Hartford, another for the Kansas City plant, and a third for the satellite facilities.

To this has been added a fourth team, that has come up since the last



DRILL PRESSES were at work at Southington a few hours after leaving E. Hartford...

war, in pilot the Southington operations headed by 30-year-old Leslie Dyer. When it is remembered that P&WA (and its branches) in the last silent effort produced almost half the aircraft engine horsepower for U. S. military planes, with a comparatively small personnel nucleus stemming from the East Hartford operation, the company's present expanded experienced personnel base indicates a far greater output potential than was previously possible.

► **Material Complication**—As in other phases of the industry, a critical factor is P&WA's reliance for expanded production on material procurement. Though this is beyond the core plant's direct control, it is a situation which must be solved if production is to be shifted to high gear.

Lead time (which have elapsed from receipt of purchase order to receipt of time of delivery) for numerous drilled parts, raw materials, and other equipment has lengthened considerably, from 10 weeks extended periods, in the past to months.

Lead time in days for some of these components shows: base alloy, 90 (was 60); center post, 90 (was 50); outer post, 150 (was 40); shaft, 120 (was 90); frame metal base, 120 (was 90); aluminum housing, 150 (was 120).

The lead time on many of the company's items has doubled in the past six months. Lead time in days for some of these components shows: base alloy, 90 (was 60); center post, 90 (was 50); outer post, 150 (was 40); shaft, 120 (was 90); frame metal base, 120 (was 90); aluminum housing, 150 (was 120).

As the jet area, with its greater proportion of steel metal work, suffers in the production scheme more effectively, they are more in hand, 400 jobs completed and involve considerable negative questions.

## USAF Awards

For test equipment (11-1001)

Summary first award, on a bid of \$10,000.

As Material Command Procurement Division makes available to Aerospace Weapons Development Agency, on a bid of \$10,000.

For engine (11-1002)

Summary first award, on a bid of \$10,000.

For engine (11-1003)

Summary first award, on a bid of \$10,000.

For engine (11-1004)

Summary first award, on a bid of \$10,000.

For engine (11-1005)

Summary first award, on a bid of \$10,000.

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## More Briefs From IAS Sessions

This is the third and last installment of a series of papers given at the 19th Annual Meeting of the Institute of the Aeronautical Sciences in New York City, Jan. 29-Feb. 1. (See *Aerospace Week*, Feb. 3 and Feb. 12, for other sessions.)

### STRUCTURES

► **An Analytical-Mechanical Method for Calculating Landing Gear Impact Conditions in Unpowered Landings**—R. T. Yttrine and R. M. Blevins, Langley Aeronautical Laboratory, NASA.

A level measure of the landing process is made, and the importance of the unpowered landing condition is considered. A simple impact-mechanism method, that takes account of approach conditions and airplane geometry and inertia characteristics, is given for calculating landing gear contact conditions for numerous aspects in unpowered landings.

Calculated results for a large airplane are used to compare the severity of landing gear impact in unpowered and powered landings, and to show the effects of such factors as landing speed, wing lift, and airfield on impact severity in the unpowered case. The separation of landing gear location and configuration in this study is a comparison of the contact conditions for two similar airplanes—one having a conventional tricycle arrangement of gear and the other having a quadricycle arrangement.

► **Aluminum Compressor Stators in Air-Cooled Engines**—R. E. Dabrowski, Aircraft Division of Westinghouse, USAF Technical Office, Dayton, and R. L. Williams, Curtiss-Wright Corporation.

This paper shows procedures for determining the allowable bending and maximum compressive stresses in both chord and plan to optimize the structural materials for which compressive stress curves are known. In addition, curves are shown that are applicable for design and inspection efforts.

Detailed procedures for obtaining the allowable compressive stresses in both the chord and planar regions are indicated for the following types of aircraft structure under compressive loads: Compressor housing of flat plates, curved and tapered flat plates, bending behavior of flat plates under stress for structural elements with finite stress (see load bending of tapered flat plates); compression buckling of tapered and curved sections with local instability; compression sections of tapered and curved sections with local instability; bending sections of tapered and curved sections with local instability; compression buckling of flat plates with stiffeners; compression sections of tapered and curved sections with local instability; compression buckling of flat plates with stiffeners; compression sections of tapered and curved sections with local instability; compression buckling of flat plates with stiffeners.

► **Some Results of Buckling-Wing Structural Studies**—A. L. Lang, Hughes Aircraft and Structural Research, and R. L.

Brightwell, Aerospace Division at Aero-Mechanical Engineering, Massachusetts Institute of Technology.

Stress state and deflection tests have been conducted in the laboratory on a 41" sweptback winged beam. Results of these tests are compared with analytical theories for predicting stress and deflections in sweptback beams. The agreement between theoretically and experimentally determined deflections is close to the stress, but both agree within acceptable engineering accuracy.

Both cases of shear rib and rib are perpendicular to the span are analyzed. The concentration of stress and shear stress at the root of the rib and the coupling between bending and torsion are discussed. Since some degree of root support deflection is unavoidable in strength tests, a method is described of obtaining an estimate for this effect in the theory.

► **Building from the Standpoint of Dynamics**—N. J. Hall, Head, Department of Aeronautical Engineering and Applied Mechanics, Polytechnic Institute of Brooklyn.

This paper is a report on an investigation undertaken to clarify details of the process of building of elements composed of testing machines. Because of the extensive results by means of dynamic experiments of testing, and the results were compared with analytical models obtained in other tests. The most rapid of the methods is that the maximum load reached in a test and test need not necessarily be the same as the theoretical stability load. Moreover, the buckling process of turbine columns often actually takes that of elastic column.

### FLIGHT SAFETY

► **Some Special Aspects of Air Transport Safety**—C. Christensen, Flight Safety Engineer, United Air Lines, Inc.

The aviation industry has learned that accidents in scheduled transportation can be eliminated. This is not the recognition that is adequately supported by formal procedures existing within the framework of scheduled air transportation. The most rapidly effective route to be followed in accomplishing the air accident goal is close cooperation to the accident before it happens.

Several years ago during an accident investigation the industry asked when several individuals were charged with the principles of the investigation. "Where were all the reports before the accident happened?" The committee reported a serious problem that has long been a flying black in the program toward fundamental safety. If we can expect the cause of an accident, then it is beyond our capacity or intelligence to expect the cause before it happens and thereby prevent it. The technique of determining accident causes is well established. If it is so well established, we can apply the same technique and technique in discovery of the accident.

► **Computer Simulation of Transport Safety Studies**—R. M. Jones, Research Aircraft Industries Association.

The published report commonly applied today in estimating accident statistics is the number of passenger deaths per 100,000,000 passenger-miles. The major disadvantage of this standard lies in the fact that it counts drinking errors.

The index is impossible to compare with data showing the TOTAL effect and deaths AND injuries caused by any one source of transport.

What is needed is a method by which both "drunk" and "happy" can be translated into a standard of measurement equally applicable to both.

Such a standard can be provided through the introduction of "life years." This would provide a means of measuring the time lost due to loss of life and loss of time through drinking error. The working days would make possible a correct measurement of total loss of life years though scheduled in loss, reduced passenger miles, lost passenger automobile, and lost auto.

► **Human Engineering for Air Safety**—R. A. McFarland, Assistant Professor of Industrial Hygiene, Harvard School of Public Health.

The safety record is scheduled in two parts. First, safety is a complex of many factors that should be avoided in the selection of the problem, such as the prevention of new accidents and the introduction of new problems. The present paper will be concerned with analyzing the conditions of the aircraft accident, the nature of the accident and the air crew in a situation where the safety of flight is at stake. It will be shown that the design of the aircraft is a high speed, high altitude flying in current and future transport vehicles.

### AIR TRANSPORT

► **Some Miscellaneous Problems Involving Jet Transport Operations at 40,000 Feet**—J. E. Williams, Manager, Jet Transport Section, United Air Lines, Inc.

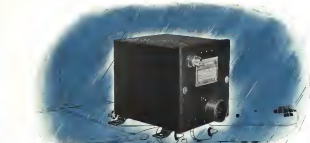
Analysis of available airport data reveals three weather factors that will most likely occur during climb and approach problems when jet transports are placed at an altitude of 40,000 ft. Clear air turbulence, high wind shears, and extreme temperatures.

Present methods of approach chart analysis should provide satisfactory in providing temperature and wind shear information, and should also support the development of new analysis and forecast methods to allow for greater reliability in the use of the flight planning stage.

The Weather Bureau network of RAW (Radar Weather) stations can be expanded to a point where wind observations at 40,000 ft. will equal the number of temperature, humidity reports, and all wind observations is extended to a frequency of daily.

► **Electronic Measurement Equipment (EME) for the Terminal Area**—J. L. Leary and George E. Litchford, Aeronautical Research Department, Sperry Gyroscope Co.

The accuracy requirements are given for various distances from the target and for the distance measurement required for final approach in the runway. The paper discusses techniques that will permit the measurement of distance to the accuracy



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1/2", 3/4" & 1" line sizes are CPL equipment  
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	LINE SIZE			
	1/2"	3/4"	1"	1 1/2"
AN Standard	1.2	3.8	5.0	11.0
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DIVISION OF GENERAL METALS CORPORATION • UTILITY, CALIF. • BIRMINGHAM IN ALA.  
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density also would be necessary in order to have titanium competitive with the lighter alloys for the construction of plastic building. And, says the NACA, such an estimate is impractical.

## Boeing to Switch to School's Windtunnel

Boeing Airplane Co. has reached an agreement with the University of Washington which gives the company priority in use of the university windtunnel, while its own undergoes a two-year \$1.5-million modernization.

In return, Boeing has agreed to pay \$20,000 to cover the cost of the use of the university tunnel and to install a new balance system to provide improved methods of model testing. Should these improvements require further funds, Boeing will make an advance up to an additional \$100,000 as per a recent agreement. The agreement was signed by Prof. Fred S. Einarson, head of the university's aeronautical engineering department and director of the university's aeronautical laboratory, and George S. Schaefer, Boeing staff engineer in charge of aerodynamic and power plants.

More than 25 percent of university windtunnel operations during the past two years have been in connection with Boeing projects, said Schaefer.

Robert Jupp, windtunnel supervisor, and Louis Gertner, research associate, both of the University's aeronautical engineering staff, will design the new balance system, which will include a removable platform for the models.

## Fog-Freeze Resistant Fighter Windshield

A new electrically heated windshield is being incorporated in the Northrop F-89 Scorpion, all-weather interceptor now in production at Northrop's Hawthorne, Calif., plant.

The windshield is built of Elenox glass, a special glass construction designed with three primary favorable properties:

- Fog is freeze resistant in any weather condition.
  - Deflect resistant.
  - Serve as a panoramic reflector.
- Libbey-Owens-Ford Glass Co., engineers who developed the windshield as it is the first structural component of the front characteristic in a fighter windshield.

The shield is an inch and a half thick. Electric heating is accomplished by connecting electric current across an invisible metal film which coats the inside of the glass. Electrodes at the edges transmit the current to the film.



GOING UP over 11 ft. is the B-47B wing being moved into the hangar. The structure is suspended in this type of test which simulates high wing loading due to pull-in pull. Note fuselage stabilizer.



GOING DOWN in 4 ft. in case, the B-47B wing frame will be tested for normal flight deflection. Hydraulic jacks, cables below wing frame to ensure proper loading in those showing an upper surface to transmit loads to wing structure.



COMPOSITE PHOTO shows combined upward and downward deflection of B-47B wing during stress tests at Wichita. Total air flow was 17 ft. later over head test increased this to over 20 ft.



DOWN BY THE NOSE, the Stratojet being constructed in this group of aerodynamic tests and static indicators. These remote-sensing devices provide control data-gathering points where engineers and technicians can work the progress of tests while they plot wing strength.

## Static Tests of Boeing's Stratojet

Structural tests of the B-47B Stratojet, started last June, have just been completed at Boeing Airplane Co.'s Wichita, Kan., division.

Although more than 100 different tests formed the program, by far the most spectacular were the wing strength tests.

In these, the wingtip deflected upward more than 14 ft., and downward more than 6 ft.

More than 700,000 lb. of structural steel went into special fixtures and scaffolding to support the test aircraft. Loads were applied by cables actuated by hydraulic rams.

The test airplane was one which had been completed ahead of schedule without engines, flight equipment, controls and accessories to save time in the detection and application of any needed design changes.



## EAL Curing Engine, Injection Ills

Re George L. Christie

Another important contributing factor, according to E. J. Hecler, Jr., is the increase of carbonator and fast reaction cycles, was the EAL-developed

EAL is service testing the Vickers, Inc., water lube (Avernum Water No. 25, 1910) on two Vickers hydraulic pumps on one DC-4 and on two Pacer model 011227 600 cc gear-type hydraulic pumps on another DC-4. To date 800 to 900 hr have been accumulated on both installations. Hydraulic system noise and vibration levels have

### Solenoid Fuel Pump

UT

According to the firm, tests recently have indicated extreme low temperature starting of engines is limited by slow cycling of mechanical fuel pumps, whereas hot fuel supply from the new unit permits starting "in appreciably lower temperatures."

Breder says with the ultracompact, positive buildup between fuel pump and carburetor was eliminated, and hot weather starting difficulties alleviated. It points out the unit can be used as a patcher to eliminate vapor lock, or fuel return.

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**Flight 4-44p and F-44p/pqqs from Switzerland! Bird being rescued in the Milano**

Since door openings are of the greatest importance in a hospital building, international engineers design doors to meet specific longer requirements. For example, while the exclusive Bi-fold Consep door used on the International Medical Center, Nass, International specialists all sliding, folding, and wheel or ice rollers common to lightweight sliding doors. This same sound-regulating principle is served through in the design of doors for large ships

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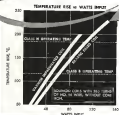


## VERSATILE FIRE FIGHTER

Equipment parked in this \$18,090 fleet-tee covers the powdered water front, including the "wet" type. In service at Seattle Tacoma Airport, this versatile machine is capable of dirt pickup to 50 mph fully loaded will deliver water, "wet" water, foam, de-icer/antifreeze or fog, separately or in combination.

five through hand lines, bursts and low-level ground temps. Hand-operated foam and dry chemical extinguishers, floodlights, towbar rolls and a portable compressor also are included. United Air Lines safety experts, J. C. Certo, says it's best for fighting apparatus anywhere in UAL system.

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## 'Ink-trace' Navigator Used in Brabazon

The "Flight Log," an automatic aerial navigation device used in a series of the British Decca Navigator, has been installed in the passenger Bristol "Brabazon" and is going into quantity production, according to reports from England. Standard Decca units are installed in some thousand ships and aircraft.

The Flight Log, which supplies instructions under development in this country (Aeronautics Week, Oct. 23), automatically shows the pilot where he is and suggests no turning. It consists of a strip map enclosed in a case which expands to 10 x 4 in. section at a time. A stylus controlled by a series of ground radio stations and an airborne receiver traces the plane's course over the map. The pilot can tell at a glance what his previous track had been by following the pointer's tracing, while its position at time of observation is denoted by the aircraft's position with reference to the map. It is controlled by drift.

Where and When—On a normal, medium length flight, the pilot would use three maps, one of his departure airport, one in route and one of his destination field. The departure and destination maps would be detailed and large scale, the en route one small scale. The two map changes while flying take about 45 sec. each. Under poor conditions, the unit is said to be able to bring a pilot to within 250 yds. of the runway.

Electrical signals which mark off specific time intervals on the map, give the pilot a quick check of his ground speed and supply him ETA estimate.

The British say that besides allowing the captain while he is in how long it took him to get there, the Flight Log will enable him to by a more precise holding pattern when required. Their stress simplicity of design by the instrument. One pilot mentioned his plans to use the stylus traced his path on the map.

Statistics of the system and cost estimate indicate that including receiver and power units weighs less than 125 lb. and takes up 3 cu. ft. of space. Main electronic map sheet being a simple sheet of conventional paper. It is inherently reliable and serious defects can be easily spotted. Decca ground stations had a break of only 156 seconds in a year's continuous operation. Flight controls use the average receiving interval on marine and air radio service.

Present Decca ground stations emit patterns covering Scandinavian coast lines and the United Kingdom.

## NEW AVIATION PRODUCTS



### Safety Wheel Chock

A collapsible wheel chock, designed to prevent aircraft slipping during engine run-up and prevent ground crew men, has been developed for the Royal Air Force by the Pyrotec Co., Ltd., London, England.

The chock consists of an aluminum, spring-loaded ramp which can be extended by operation of a foot lever to prevent forward movement of the aircraft wheel. In the extended position, the ramp locks to a flexible shoe on which the wheel rests. The assembly has been successfully tested with a thrust of 10,500 lb. Pyrotec says.

To fix the chock, the ground crewman stands at a safe distance and pulls a chain to collapse the ramp, which then can be drawn clear of the chock shoe. The aircraft then rolls off the flat, flexible shoe. "It's a chock, blocking wheels both forward and aft, also can be used to anchor wheels of parked aircraft."

Pyrotec says these chocks are designed for use in all kinds of weather and under various ground conditions. They presently are made in one size only, for aircraft up to three feet in diameter, but larger sizes will be introduced later.



### Telemetering Motors

A line of telemetering motors, employing "Tany" batteries not formerly available. "In units of this general type, has reached the production line of Servo-Tek Products Co., Paterson, N. J. Applications range from data or blow-

ers to telemetering response switch drives.

The motors use a ring type Alnico V field magnet in conjunction with a 14 commutator segment armature. The company says long brush life and most least commutation characteristics are achieved through flux concentration. All units run on precision ball bearings and can be supplied with high-speed brushes.

Motors weigh around 24 oz. and measure 1 1/4 in. in diameter and 1 1/4 in. in length. The line includes motor voltage ratings from 6 to 250 v. dc and from 40 to 100 v. ac. The company says.

Accuracy of the unit is 1 percent of the full scale reading, according to the firm.

Four torque ratings—0.7, 0.5, 0.10, 0.020 lb. in., and three reversible bits are available. Others can be furnished to order.



### Thermocouple Gland

A line was thermocouple gland for use with temperatures from -200 to 3000 F. and pressures up to 4000 psi is being marketed by Conax Sales Co., Inc., Buffalo.

The gland is designed to provide the greater accuracy and greater resistance to base wire thermocouples without the leakage and expense usually associated with this method of temperature measurement, according to the company's engineers.

Repeat interchangeability of all parts in the unit permits use of any thermocouple wire to meet individual requirements. The fixture also makes the gland independent of the base wire, which can be quickly replaced, Conax points out.

Sealing the wires by compressing die powdered tale between two ceramic insulators provides an electrical seal that is virtually unaffected by temperature or chemical action. The unit's front part is packaged with a supply of insulators and tale. Assembly involves simply sliding the insulators in place, adding tale and tightening the cap.

The "body and legs" are made of Type 303 stainless steel and the gland is made of brass and has, which do not come in contact with the gases, vapors or liquids.

of scale of high quality steel. Address: 4515 Main St., Buffalo 21, N. Y.

### Torque Checker

A lightweight, high-precision torque indicator, providing suitable for main turning to rigid specifications torque standards for following in delicate electronic equipment, is being produced by Monell and Monell, 55 Dry St., New York 7, N. Y.

This compact, hand instrument, named "Torque," is available in two sizes and tests the actual tightness of 5/16-in.-diameter bolts, nuts, etc. According to the firm, it is available in two sizes: Federal Telephone & Telegraph Co. and Bell Telephone Laboratories, the company says. Accuracy of the unit is 1 percent of the full scale reading, according to the firm.

Four torque ratings—0.7, 0.5, 0.10, 0.020 lb. in., and three reversible bits are available. Others can be furnished to order.

The instrument also can be used to measure the friction of devices such as variable condensers and the starting torque of small motors and for many similar applications.

## ALSO ON THE MARKET

Micrometer on 12 and 24 in. length range and available in various stock sizes has scale graduated at one-in. intervals and repeatedly reads with same accuracy and speed as regular micrometer. Made by Lester Micrometer Co., Cleveland, Ohio.

"Rho-Rac" tape-type closure for industrial use can be employed to pack radial ports of flow, motive fluid and radial ports when closing stock valves. Device has 12-1/2 in. hole can be used as blowers to remove foreign matter or as pump spacers. Made by Ideal Industries, Inc., 2146 Park Ave., Syracuse, Ill.

Stainless steel hose clamps available in six sizes from 1/2 to 2 in., has band of 26 gauge 1/2 hard stainless steel and 16 gauge stainless. Made by Specialty Products Co., 1963 E. 66 St., Cleveland, Ohio.

Specialty compounded mortar forces into similar space between bolt and nut of hole to allow water-tight and fire-tight seal. Mortar has strong adherence to type metal, helps distribute stresses and strains, and, according to maker, Fast Fire Engineering Co., St. Louis, Mo.



Bell D-182 plane transport bearing U. S. identification is a Riley demonstration model.

## American Orders Roll in for de Havilland Dove

A light transport plane that is new on the American scene last week showed promise of gaining U. S. popularity as an executive or business type.

The first American distributor for the 7-12 passenger, twin-engine de Havilland Dove has sold the only Dove on hand and taken tentative orders for 28 more the first month of his distributorship.

Jack Riley, Shreveport, La., got his

four demonstrators Dave just over a month ago and has set up complete engine and airframe overhaul facilities.

His territory is the South. First sale went to John Wray, a Texas citizen.

Riley took off for England recently to expedite delivery of more Doves. He will also negotiate for some second-hand Doves offered at \$30,000 each, with complete airframe and engine overhaul

just finished by de Havilland. The planes were traded in by an African airline for five-engine Hercules. The engines have no spare time.

Meanwhile, Wiggins Airways is working for CAB and pay that would enable the line to take immediate delivery of two Doves for trial operation. If Wiggins finds the Doves meet its requirements, the company plans to convert its whole fleet.

## Oregon Dusters Ask Safety Rules

Planes affiliated with the Oregon Aviation Assn. have taken action aimed at prohibition of flies engaged in dusting Pacific Northwest forests in the battle against spruce budworm.

In the 1950 campaign, in which more than a million acres were sprayed, 17 crashes occurred in which seven pilots were killed.

Attributing these accidents largely to violent hits from trees that "did not know what they were getting into," the Oregon fliers, meeting at Seaside, adopted recommendations that dust pilots should be required to take new pilots on test flights around areas to be sprayed; parachutes and shoulder harness should be mandatory for all pilots; and planes be equipped with stall warning indicators, and all planes used in dusting should be inspected prior to avoiding crashes.

Contracts for this year's spraying are expected to total about \$4 million. In Oregon, where most of the infected forests are located, 14 contracts will be awarded by the state and federal governments.

## Taylorcraft Gets New Capital

Taylorcraft, Inc., Conway, Pa., has completed a new financing program in raising continued flightplane output as long as materials are available for engine work, as well as enough capital to handle delivery orders now on the books and being accepted. The company is now chartered in Pennsylvania with a capital of \$1 million.

Capital has been divided into 500,000 shares having a par value of \$2 each, with recent orders receiving five shares of the Pennsylvania corporation for each share of the former Ohio corporation now held by them. General de C. of Pittsburgh have authorized 100,000 shares; most of which have already been sold. The Ohio corporation has been dissolved.

C. C. Taylor continues with the firm and will supervise military aircraft contracts projects. B. J. Mearns remains as president and S. L. Card continues as secretary and treasurer. Newly elected to the board of directors are Clifford Bell and R. V. (Buck) Tucker. Tucker is currently with his aviation supply company.

## BRIEFING FOR DEALERS AND DISTRIBUTORS

► **Inspection Manual**—A practical, handy 50-page guide for personal pilot use on the Federal Aviation Inspection Manual placed on file at the Government Printing Office, Washington, D. C., for 55 cents.

► **School Cuts Schools**—New England Aircraft School, one of the oldest in the U. S., was recently closed by Boston University by founder William N. Carlson. The aviation school will continue operation at Logan International Airport until a new building is completed on the university's campus.

► **Crews Awarded**—For the second year in a row, R. P. Bowman Co., Oakland Municipal Airport, was chosen as top distributor in the country by General Aircraft Co. The distributor has been located at Oakland for 22 yr.

► **White Distributor Named**—Air Associates has been appointed factory warehouse distributor for R. M. Hillingsbrand Corp.'s line of White packaged aircraft chemicals.

are businessmen

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**OF COURSE NOT!** Literally, their normal body temperature is 98.6—same as laborers, engineers or any other group of people. And, figuratively, they're no more, or no less, cold-blooded—as a group.

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Let's not make the big—and costly—mistake, then, of generalizing on religious or racial groups. Adapt and carry out these common sense principles:

1. Accept—or reject—people on their individual worth.
2. Don't listen to or spread rumors against a race or a religion.
3. Speak up, wherever we are, against prejudice. Work for understanding.

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SOUTHERN SERVICE TO WEST by interchange involving Delta, National, Braniff, Continental and American is proposed by CAB.

## CAB Rules for Multiple Interchange

Majority proposal favors service by combination of five carriers; Josh Lee enters strong dissent.

In its ruling on the Southern Service to the West case, the Civil Aeronautics Board makes a policy statement as important as the decision of the actual case on hand—its limits of interchange as opposed to *en route* service.

High points of the decision and policy statement:

- CAB orders interchange service between five airlines.
- CAB denies new route and route extension applications of the original applicant—Southern Air Lines—and the corresponding of five other lines.
- CAB is all out for double and triple interchanges.

- CAB is going ahead on its newly reformed policy to strengthen the existing trunk routes and make no change of the route pattern.

- CAB will turn a cold eye on any new route application, and thumbs down on new routes that may divert substantial traffic from existing services.

- Competition for competitors' route is out.

- Southern Service—CAB proposes interchanges as follows:

- Atlanta to the West Coast via Delta Air Lines and American, with interchange at Dallas or Ft. Worth.
- Miami to the West Coast via National Airlines, Delta and American, with National-Delta interchanges at New Orleans, and Delta-American inter-

changes at either Dallas or Ft. Worth.

- Houston to the West Coast via Braniff Airways, Continental Air Lines and American, with Braniff-Continental interchanges at San Antonio, and Continental-American interchanges at El Paso.

The Board held the record on the preceding open to May 31 to permit American-Delta to file for approval of any modification of the Board order, and to allow the other carriers to "come into and file with the Board for approval an interchange agreement providing for the through service as desired."

Until the National-Delta-American interchange gets final approval, Delta and American will continue their present interchange service.

Major gaps in service created by the CAB is picture is likewise in competition for publications of Los Angeles-Francisco service on the American interchange route, publication of Jacksonville service on the Delta-American interchange route, leaving Southern Texas cities off any through business interstate route.

American may file its arguments of the southern transcontinental interchange either to Los Angeles or to San Francisco, but cannot serve both on the same interchange leg. Delta's eastern interchange starts at Atlanta. The pro-

posed temporary American-Delta interchange came up from Miami via Jacksonville.

Josh Lee, Delta-CAB member Josh Lee has told the majority CAB decision on both substance and procedure. Said Lee: Southern Texas is left off transcontinental service. The majority has created an inferior and inadequate route pattern which perpetuates monopoly over one of the strongest route segments in the country. The southern interchange pattern set up by the CAB—National, Delta, Braniff, Continental and American—would have conflicting interchanges.

Dallas, according to Lee's figures, would do without \$100,000 annual revenue—the difference between the Delta revenue from the existing American-Delta interchange starting in Miami, and the CAB-proposed option. Delta's incentive will now be to sell Miami-West Coast passengers to Delta for transfer to a West Coast trip instead of selling the interchange via National to New Orleans, and via Delta to Dallas from which Delta would get less than half its former interchange revenue.

Braniff usually stands to lose \$56,000 annual revenue it used to make by carrying Houston, Austin, San Antonio-West Coast passengers to Dallas for plane transfer. The CAB-proposed interchanges would leave Braniff all Houston and Austin passengers a very short haul flight to San Antonio instead of to Dallas as formerly.

As to procedure, Lee says the Board perfunctory open pending interchange applications for seven Houston, Austin and San Antonio. These should have been consolidated with an economic Continental-Braniff application as the Board could see all the possibilities at once, Lee says. One major proposal that would have broken the American hold on Western airports is a Continental-TWA interchange—San Antonio, Albuquerque, Phoenix, West Coast. San Antonio is not served with connections through service by the existing Delta-American interchange.

**Future CAB Policy—**Legal policy statements took the form in the CAB opinion. There is a different CAB face the way that ruled in the earlier position. These statements invite criticism for they possibly leaving an entire CAB decision.

**Among the CAB policy effects:**

- **Less competition.** "The route structure does not send competitive airways against." "Competition already exists over a large part of the nation's airline network and the benefits of the competitive spirit generally, if not all ways, equal to travel that have no direct competitors."

- **Fewer new routes.** "Where the only threat of service is absence of through service, 'no appropriate interchange operation between connecting carriers should be employed.'"

- **Lower fares.** "When airline earnings are good, the Board will consider lower fares."

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plan one way of two aircraft forward and left, against the rearward lavatory. The twenty-sixth seat is for the cabin attendant.

Best is the Super DC-3 type, of four rubber. They are somewhat faster, but are unreliable. Landing gear is located forward to the right-hand corner of the cabin, where forward cargo box is on the standard DC-3. Carry-on baggage rack is provided directly across from the main cabin entrance door. The rear cargo box and cabin loading door are enlarged. Passenger ramp is integral part of power-operated door.

A most risk is pointed to the area formerly occupied by the buffet, put to right of the passenger door. The buffet is to be used for the baggage rack, opposite the baggage rack.

Exterior paint job includes white top fuselage and redesigned cowling. Interior color scheme includes gray carpeting, light gray upholstery, and color-coded fabric with Louisa line leather arm rests and trim, which side walls up to window track in gray vinyl, walls up to upper edge of overhead rack coating in beige vinyl, ceiling coating of an aluminum, window curtains in dark green, vertical partitions in white finished with wood graining in natural color.

Renovated of our history, using 90 in., is made possible by additional power output from two 200-hp, 14-in. generators. The floor is about completely using corrugated aluminum with carpet.

Other improvements include new passenger oil bottom that the lights, VOA, radio navigation equipment, redesigned door lights and new ceiling night lights, cold water dispenser, and buffet holding two food cases of 14 trays each.

The first DC-3 went into the hangar for conversion last month. Last of the fleet should not be about June, 1952. Cost of project cost of the conversion is figured at about \$18,000 for each plane.

**Delta First Fleet.** Although air-line seldom admit optional buying plans or leases in advance, they will be doing so soon as they can get DC-3s revenue for the next three to four years. That is, the CAB has ruled the airline in its tentative agreement purchase plan for the next five years (to 1956). Then CAB will assess these plans and approve the property to the Controlled Materials Plan.

**United Air Lines,** with 50 DC-3s already owned, and 16 Convair-Learns on order for 1952-53, deliveries is well prepared for modifications as pace. United started to convert seven DC-3s in 23 November, but conversion has not yet begun. United is to convert first to DC-4 conversions for the Pacific shift, then decided to hold the whole project in abeyance, with only



DELTA AIR LINES plans conversion of all its DC-3s to 35-passenger capacity.

## Delta Joins DC-3 Conversion Trend

Delta Air Lines joins the procession of DC-3 fleet owners who have started turning passenger capacity and modernizing cabin layout (Aviation Week 28, 19, 1950). Delta is converting its passenger fleet of 15 DC-3s to 25-seat capacity.

Delta is also operating its DC-3 fleet under the new Part 41 Civil Air Regulation, among some leading weight by 200 lb to 23,000 lb, instead of the 24,000-lb gross leading weight allowed to transport cargo weight.

**Other Airlines—**Delta is only one of several U. S. airlines (previously by the problem of DC-3 inadequacy in light of present-day war and postwar demand for

space). Few if any foreign airlines have enough surplus or traffic potential currently to be in the market for new American two-engine replacement, as DC-3 conversions are becoming popular abroad and in South America. Tender airlines are in the same boat.

U. S. trunk airlines that have not yet announced two-engine component plans are Capital Airlines with 25 DC-3s and three Super DC-3s; Mid-Continent with 20 DC-3s and 4 Convair-Learns; Chicago & Southern with 13 DC-3s and Northeast with 3 DC-3s and 5 Convair-Learns.

**Modern Layout—**Delta's converted DC-3s will seat four abreast in six rows,





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## COCKPIT VIEWPOINT

### An Erleuchteter Film am Ausbruch Lichtes

A symposium on All-Weather Flying was part of the 19th annual meeting of the Institute of the Aeronautical Sciences in New York City. Presiding over the session was Col. J. Forcett Taylor, Jr., Chief, All-Weather Flying Division, USAF.

Operating the synthesizer was a spectacular film on approach lights and runway readings, a report of ATA and ATIS. It was composed of weather sales by the Landing Area Experiment Station, Air Force and the Western Synagogue Co. Over 500 acres were included of several operations in bed between. Some were made with velocities at low, at 150 ft and others, some. So expensive were these issues that the audience eventually tried to help by the plane by one of "body English" and exclamations. These patterns as they, considerable part of the good and bad points of various companies.

\* **All Types Shown**—All types of approach lights were used and several important factors were demonstrated, usually, the need for signposts, reference, contrast, clear delineation, threshold identification and a "go-no-go" indication.

For years, airports with left-hand approach light installations have had runway lights and lights on the right side of the runway. Until recently there was no explanation for this. Now, the FAA's new standard is in place. The answer, as explained above, is that the runway lights are not visible in the dark, so an optical illusion appears to be behind the light. It is this illusion that is the explanation with an inability to see the lights in the dark. The lights, although perfectly aligned, appear to be on a collision course with the lights. Normal roadway would be to make a right turn. The apparent angle of the left-side lights would then be to make a left turn. The apparent angle of the left-side lights would then be to make a left turn. The apparent angle of the left-side lights would then be to make a left turn.

During low contrast conditions, such as daylight fog, it was impossible to distinguish pavement from road early enough to land on a runway lacking painted markings. The only cause to the runway was magnetic inductance and side marks. When the same runway was provided with bold painted markings at the threshold, centerline, and beeper it stood out plainly. These series clearly indicate the need for such markings to provide contrast and to maintain alignment throughout the landing roll.

► **Slope-Line Glass:** The glass factor was shown in appendices to MileWide using ambient slope-line lights. By a lot of clever photography, the Sperry cameramen were able to show unambiguously the pilot's eyes and cockpit instruments as well as the view ahead of the plane. At night the lights were dimming and the pilot kept squinting and ducking his head back into the cockpit to prevent blinding. Use of just three over the units eliminated the glare, but the resulting decrease in intensity caused the need for condenser discharge lights.

On many of the approaches it was impossible to anticipate the beginning of the railway, the exact problem of the child who must *pass* by leaving. Only on over-bridges across a single crossing was there a definite point of intersection of the child and the train. On these bridges, the child was not a member of the crowd, whereas several crossings produced confusion, and no confusion on sidewalks. The single bar, located 1000 feet from the end of the railway, gave the past a grasp by which he could determine the propriety of continuing the leading operation or pulling out. The term "go-no-go" aptly describes this necessary feature.

Many other interesting items are shown in the film. One concern, for instance, during the night from the left row of slope-side lights, when only a few lights are visible. Not do these lights periodic roll or brighten noticeably. On an approach using satellite navigation, a WLF was bright and beamed and the lights show the attitude of the plane. Night approaches at LaGuardia showed the confusion produced by low-powered, rounded, directional runway lights, while the wide made field of uniform intensity used at MWRM outlined the runway clearly and gave good word and marker information.

Everyone active in this field should see the film. It gives one the feeling of actually being in the pilot's seat and one can understand his problems and see the solution in nonflamboyant pictures.

—R. C. (Aer) Raboon

(The above commentary was written by R. C. (Arc) Robson, an American Airline captain and is carried here to represent to our readers the airline pilot's point of view on various issues. The feature will be carried at frequent intervals and any comments by readers are welcome.—Ed. note)

## WHAT'S NEW

## Telling the Market

Users of aluminum alloys and mill products are going to be delighted with a new data book which has just been issued by Reynolds Metals Co., Louisville, Ky.

The 194-page *Abominable Date Book* is a scissor and glue project of a similar book issued in 1961 by the Reynolds company.

The handbook includes tables of data on physical, chemical and mechanical properties, formulas, weights, sizes and production limits.

Pages of explanatory text cover the degeneration system for alloys, casting methods, casting alloys, foundry and fabrication practices.

In short, the handbook seems indispensable to anyone who works with aluminum and its alloys.

Distribution of the book is without charge to engineers, designers and technical men who request it on company letterhead. Address: Reynolds Metals Co., 1930 South Third St., Louisville, Ky.

**Machine tool and accessories Bulletin**  
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 to industrial metallurgy and heat  
 treating. Write the Editor, Heat Test  
 Review.

**Catalogs:** 36-page **Catalog AEC-302** contains detailed information, including company view, of Air Reduction's complete line of welding and cutting torches, valves, tips and accessories. Write Air Reduction Sales Co., 90 E. 42 St., New York 17. . . **Catalog G.I.** by Curtis Universal Joint Co., Inc., is aimed at persons who purchase, design, produce or maintain universal joints. It gives test data, engineering details, and prices. Write company at Springfield 7, Mass.

Revised and enlarged edition of *Accurate Handbook of Technical Data on Springs*, offering engineers many shortcuts on making spring calculations, is available for loan Accurate Spring Manufacturing Co., 1811 W. Lake St., Chicago 24.

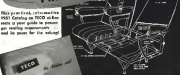
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## Saucers, Secrecy & Security

We congratulate Look Magazine for making out the 15-year flying saucer mystery. We are sorry *Aviation Week* didn't solve it. Our idea is that apparently very few knew the story outside of the Office of Naval Research—not even the Air Force, which sent us personnel its plans to go on wild saucer chases. As it happened, though the project was not an aviation matter, *Aviation Week* came very close to the story in 1949.

Look Magazine has performed a public service. But its revelation is a tragic commentary on the low state of the Administration's sense of public duty, and an increasing trend toward unnecessary secrecy. For since those years government spokesmen, from President Truman and the former Secretary of the Air Force as down, told the people impudently, as though they were children, that what they were saying were images, made-up quotations of various conventional clichés or nothing at all.

Yet now it comes out that even while the government was telling the people these things the ONR was busily surveying 2000 aspects of "flying disks" and telling out a solid mass of reports from plane pilots, scientific observers and reliable sources. "After a thorough investigation, we find there is not a single reliable report of an observation which is not attributable to the cosmic balloons," said Dr. Urrut Ladd, the project director.

We hope the Office of Naval Research can pull itself out of this scandal with a sensible reason for having this explanation occur for so long. It will have to be a very good reason to satisfy many of us. Otherwise we must charge off the apologetic flying saucer bore of the twentieth century at the same example of that chaotic Washington tendency to classify everything as secret. Realism of this magazine has often said the question here that secrecy is overdue in the national capital, we have seen no better example than this.

The bare ONR has perpetrated brought on some flying disk to public hysteria in some form, out the Air Force, National Guard and other public services needless wasted resources in investigations and flights and, most tragic of all, cost the life of an Air Force pilot, Capt. Thomas F. Maister, whose plane crashed, while he was pursuing a "saucer" in 1948. Apparently five months after the ONR balloon activities began neither ONR nor high Navy officials had signed off the Air Force, also in case pressure the USAF would not order to permit its pilots to try to chase already classified objects that were known to be 1948-1949.

Even if the objective were considered secret by the ONR, there could have been no apparent secret interests in having a brief announcement as soon as newspaper reports about secret began popping up. The announcement could have been restricted to a few words tying the mysterious reports to new and larger balloons that were making upper air cover my observation and the like. The public would have been satisfied immediately. Because it has known ever since Dr. Robert A. Millikan began talking them 30 years ago that observations of cosmic rays have been going on with balloons. And it also knows that weather balloons are in the air most of time, around the clock.

Look Magazine's story quotes Dr. Ladd as saying, "When this project first began, it was kept secret. Now, there is no longer any need for secrecy in a scientific basis. And

certainly there is no longer any need to keep the public in the dark about what flying saucers are."

The citizens who have been reading about these things for several years might ask why there was ever any need for secrecy as far as letting them in on the simple fact that large balloons were being used thus far to obtain secret information system. What possible military secrecy is involved by telling the people they are using balloons? What saucer does a balloon's configuration betray? What secret is it to tell the public to develop to the point where human life is lost and the public began reading about little creatures riding on flying saucers through interplanetary space and making us earth?

The citizens might also ask—if the project was so secret until last week—why the ONR permitted one of its employees to write an official paper for delivery at a public scientific meeting two years ago.

*Aviation Week* itself in its issue of Feb. 7, 1949, carried a local digest of a paper delivered in January, 1949, at the Institute of Aeronautics. Scientists meeting in New York. The full text of the paper, by E. G. Drossler, a meteorologist of the Comptroller's Branch of ONR, was never made available to us. The direct cause is at least the Institute. Our headline read: "The Navy Has a Skyhook." The digest, as we printed it in early 1949, said:

"Comparatively successful plastic balloons have been developed and is being utilized in broad groups of upper atmosphere research. In 52 flights, heavy balloons have carried to altitudes exceeding 50 km. (Note—This is 58,400 feet.) Scientific instruments are carried aloft to collect new information on cosmic rays, biological phenomena, meteorological parameters, etc."

So the public has a right to know the answers to some questions.

If a public address could be delivered in early 1949 describing this last-but project even to the extent just quoted how could national security have been breached with the added simple statement that these new balloons could be responsible for the frequent public reports of "flying saucers"?

Why was the flying saucer mystery permitted to grow out of all reasonable bounds after the first public response to seeing these new balloons? Why was it permitted to build up for three years to the extent of a world-wide mystery and even loss of life? Even if ONR had its own secrets for wanting to maintain secrecy, why did not the Navy's official controls break and break the silence? And if the Navy still wanted to keep its own counsel, why was it not controlled by someone ever higher in our National Administration who had a sense of public duty and some perspective on this subject of secrecy and national security?

It may be a fair question to ask the ONR whether it deliberately maintained its secrecy not because of national security but in order to encourage the press to continue reporting flying saucers for it, so ONR could obtain its 2000 observations. Now that it has them, perhaps this is why Dr. Ladd says, "There is no longer any need for secrecy."

If this is the explanation for the thin curtain around Project "flying saucers," we are more than ever certain that this country needs a free press at it never needed it before.

—Robert H. Wood



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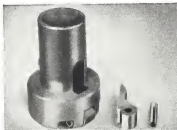
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